Space Weather Forecast

Issued on Wednesday, 22 February 2023 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Minor/Moderate R1/R2 radio blackouts likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been moderate in the past 24 hours with two Moderate-class flares observed from a region in the Sun's northeast. This group is currently near the northeastern solar horizon which is hampering full analysis, however it appears to have rapid areal growth in its trailing spots. Six other regions are presently on the Sun. Most of these were either stable and magnetically unipolar or else in decay, including the strong class-producing sunspot group (dating from 17 February), which has seen overall areal decline. A few Coronal Mass Ejections (CMEs) were visible in available satellite imagery for the period, however no significant Earth-directed CMEs are forecast, although glancing impacts may occur on days 2 and 4 (Thursday and Saturday).

Solar Wind / Geomagnetic Activity: The solar wind has been mostly slightly elevated in the period. The number of particles in the solar wind is close to average levels. The magnetic field associated with these particles was at Weak to Moderate levels. The all-important north-south component was rather erratic with a spell of anti-alignment with the Earth's field for time in the morning, with Weak levels becoming Moderate for a time. The net result of the above solar wind measures was Quiet to Unsettled and comfortably below Minor Geomagnetic Storm levels.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate solar activity is forecast to continue, with the presence of both the strong class-producing group and now a new potent and growing region in the northeast. Both of these dominant groups should be present throughout the coming four day guidance period.

Solar Wind / Geomagnetic Activity: Earth is in a slightly elevated solar wind regime and transition to a fast one due to a 'coronal hole' high speed stream during the UTC morning of day one, Wednesday 22 February, is forecast giving a peak slight chance of Minor Geomagnetic Storm for the four-day period, reducing with time to largely quiet conditions by the end of the current UTC week (with moderate confidence given the possibilities of CME shocks).

Energetic Particles / Solar Radiation: Solar radiation carries a slowly increasing slight chance of rising towards the S1 level, perhaps exceeding it, should any suitable larger flares occur.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	1	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.